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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,218	02/17/2004	Xiao-Peng Liang	WJT08-0022D1 (JSF001-0076)	9463
7590	09/06/2005		EXAMINER	
William J Tucker 14431 Goliad Drive Box #8 Malakoff, TX 75148			JONES, STEPHEN E	
			ART UNIT	PAPER NUMBER
			2817	

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/780,218	Applicant(s) LIANG ET AL.	
	Examiner Stephen E. Jones	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/16/05 has been entered.

Response to Amendment

2. The affidavit under 37 CFR 1.132 filed 8/16/05 is insufficient to overcome the rejection of claims 1 and 3-7 based upon the Miyazaki et al., Dimos et al., Mee, Ishizuka et al., Zappala references (all of record) as set forth in the last Office action because:

In the affidavit Dr. Sengupta addresses strontium titanates and barium titanates, but fails to recognize and address that Dimos teaches barium strontium titanates in the same manner as the present invention. Also, Dimos teaches a dielectric constant at room temperature of about 2000. Furthermore, Dimos clearly shows in Fig. 9 that the conductors can be normal metal or superconducting. Finally, the limitation of a tunability in relation to room temperature appears to be new matter as detailed below.

Also, Dr. Sengupta fails to even recognize the Dimos Fig. 9 which clearly teaches a tunable dielectric varactor as applied in the rejections.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1 and 3-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 1 and 7, the limitation of a tunability range from about 10% to about 80% including room temperature appears to be new matter which was not disclosed in the original subject matter.

Any arguments regarding this new matter rejection should include the location in the original disclosure where the subject matter can be located.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1 and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al. in combination with Dimos et al., Mee, and Ishizuka et al. (all of record) for the reasons of record.

Miyazaki (Fig. 34) teaches a high frequency filter including: a main microstrip transmission line (31) (Claim 5); conductor ribbons (14) are coupling mechanisms (which can be considered inductive loops since ribbon conductors have inductance values and have an arc shape (such as shown in Fig. 34) which meets the term loop in its broadest meaning) (Claim 4) to connect microstrip resonators (110) having capacitors (13); the resonators are $\frac{1}{4}$ wavelength apart (Claim 6) (see Col. 3, lines 38-42), and the filter is capable of notches (e.g. see Fig. 18).

However, Miyazaki does not teach that the capacitors are electrically tunable capacitors such that the resonators are tunable, that the capacitors are tunable dielectric varactors; that the varactors have a substrate with a first dielectric constant and having generally a planar surface; a tunable dielectric layer having a second dielectric constant greater than said first dielectric constant; and first and second electrodes positioned on a surface of the tunable dielectric layer opposite the generally planar surface of the substrate and a gap separating the electrodes (Claim 3); that the filter is two filters (as transmit and receive filters) each used in a wireless telephone diplexer coupled to an antenna, or that the tunable layer has a permittivity in the range

from 20 to 2000, and a tunability in a range from 10% to 80% at temperatures including room temperature (Claim 1).

Dimos et al. discloses a tunable varactor (Fig. 9) which comprises a substrate having a first dielectric constant and has generally a planar surface; a tunable dielectric layer having a second dielectric constant greater than said first dielectric constant; and first and second electrodes positioned on a surface of the tunable dielectric layer opposite the generally planar surface of the substrate and a gap separating the electrodes (e.g. see Col. 7, lines 4-10 and Col. 8, lines 43-50). Dimos also teaches that the tunable material can be barium strontium titanate and teaches room temperature performance (e.g. see Col. 3, lines 20-36).

Mee provides the general well-known teaching of providing transmit and receive circuits in a duplex arrangement including filters.

Ishizuka provides the general well-known teaching of using a transceiver in a mobile phone.

It would have been considered obvious to one of ordinary skill in the art to have substituted tunable dielectric varactors such as taught by Dimos in place of the fixed capacitors in the Miyazaki filter, because it would have provided the advantageous benefit of variable capacitance instead of fixed capacitance and thus tunability of the resonators of the filter, thereby suggesting the obviousness of such a modification.

Also, it would have been considered obvious to one of ordinary skill in the art to have made the tunable layer of the combination of Miyazaki et al. and Dimos et al. to have a permittivity in the range of 20 to 2000 and a tunability in a range from 10% to 80% including room temperature, especially, since the combination of Miyazaki and Dimos meets the physical structure limitations (i.e. the general conditions of the claimed invention are met by the prior art), and also since Dimos teaches barium strontium titanates in the same manner as the present invention the above described limitations would have been considered a mere optimization or workable range to one of ordinary skill in the art.

Furthermore, it would have been considered obvious to one of ordinary skill in the art to have used the filters in a wireless phone having a diplexer (such as taught by Miyazaki and Mee), because it would have provided a well-known filter means having the advantageous benefit of a common/shared antenna of the diplexer between the receive and transmit circuits, thereby suggesting the obviousness of such a modification.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zappala in combination with Mee, Ishizuka et al., Miyazaki et al. and Dimos et al. (all of record).

Zappala (Fig. 4) teaches a notch filter connected to an antenna including a bandpass filter between a termination and a circulator.

However, Zappala does not explicitly teach that the filter is used in the transmit and receive sides of a diplexer circuit of a wireless phone, or that the filters include at

least one tunable dielectric varactor having the tunable layer with a permittivity in the range from 20 to 2000, and a tunability in a range from 10% to 80% at temperatures including room temperature (Claim 7).

Mee provides the general well-known teaching of providing transmit and receive circuits in a duplex arrangement including filters.

Ishizuka provides the general well-known teaching of using a transceiver in a mobile phone.

Miyazaki (Fig. 34) teaches a bandstop/pass filter as described above (Fig. 34). Since a bandstop filter includes regions that not only stop, but also regions that pass bands of ranges of frequencies, it thus can also be considered a bandpass filter.

Dimos teaches a tunable varactor as described above.

It would have been considered obvious to one of ordinary skill in the art to have included two notch filters such as taught by Zappala in a duplex circuit of a wireless phone such as taught by Mee and Ishizuka, because it would have provided a well-known RF transmit and receive filter means for a wireless phone having the advantageous benefit of a common/shared antenna of the diplexer between the receive and transmit circuits, thereby suggesting the obviousness of such a modification.

Furthermore it would have been considered obvious to one of ordinary skill in the art to have substituted Miyazaki's filters in place of the generic bandpass filters of Zappala, especially since both are for RF frequencies including microwaves and thus

would have been considered a mere substitution of art-recognized equivalent radio frequency bandpass filter means.

Additionally, it would have been considered obvious to one of ordinary skill in the art to have substituted tunable dielectric varactors such as taught by Dimos in place of the fixed capacitors in the Miyazaki filter, because it would have provided the advantageous benefit of variable capacitance instead of fixed capacitance and thus the advantage of tunability of the resonators of the filter, thereby suggesting the obviousness of such a modification.

Furthermore, it would have been considered obvious to one of ordinary skill in the art to have made the tunable layer of the combination of Miyazaki et al. and Dimos et al. to have a permittivity in the range of 20 to 2000 and a tunability in a range from 10% to 80% including room temperature, especially, since the combination meets the physical structure limitations (i.e. the general conditions of the claimed invention are met by the prior art), and also since Dimos teaches barium strontium titanates in the same manner as the present invention the above described limitations would have been considered a mere optimization or workable range to one of ordinary skill in the art.

Response to Arguments

Applicant's arguments filed 8/16/05 have been fully considered but they are not persuasive.

Applicant submits an affidavit from Dr. Sengupta to overcome the prior art rejections. As noted above, the affidavit does not provide convincing reasons why the prior art rejections are overcome. Also, as noted above, the new limitation in the claims

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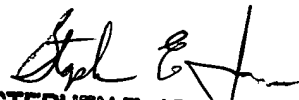
of a tunability in a range from about 10 to 80% including room temperature appears to be new matter not disclosed in the original subject matter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen E. Jones whose telephone number is 571-272-1762. The examiner can normally be reached on Monday through Friday from 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SEJ


STEPHEN E. JONES
PRIMARY EXAMINER